PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Takeo KAWASE

Application No.: New U. S. Patent Application

Filed: April 12, 2001 Docket No.: 109263

For: LIGHT EMITTING DEVICE

PRELIMINARY AMENDMENT

Director of the U.S. Patent and Trademark Office
Washington, D. C. 20231

Sir:

Prior to initial examination, please amend the above-identified application as follows:

IN THE CLAIMS:

Please replace claims 3-14 as follows:

3. (Amended) A light emitting device as claimed in claim 1, wherein the substrate has a corrugated surface.

4. (Amended) A light emitting device as claimed in claim 1, wherein a conductive polymer layer is formed over the transparent electrode, the conductive polymer layer having a corrugated surface opposite to a surface facing the transparent electrode, and the light emitting material being in contact with said corrugated surface of the conductive polymer layer.

5. (Amended) A light emitting device as claimed in claim 1, wherein the light emitting material has an absorption coefficient of less than 1000 cm^{-1}.

6. (Amended) A light emitting device as claimed in claim 1, wherein the light emitting material comprised a conjugated ploymer.

7. (Amended) A light emitting device as claimed in any of claims 1, wherein the light emitting material comprises a polyflourine derivative.

8. (Amended) A light emitting device as claimed in claim 1, wherein the corrugated surface has a pitch Λ according to the equation: -

$$\Lambda = v\lambda_0/n\sin\theta_m$$

in which angle θ_m is the angle of reflection from the upper and lower surfaces of the layer of light emitting material of light propagating in a waveguide mode m in the light emitting material, λ_0 is the output wavelength, and n and v are integers.

9. (Amended) A light emitting device as claimed in claim 1 , wherein the pitch of the corrugated surface is in the range 300 to 450nm.

10. (Amended) A light emitting device as claimed in claim 1, wherein the corrugated surface has a one-dimensional periodic structure.

11. (Amended) A light emitting device as claimed in claim 1, wherein the corrugated surface has a two-dimensional periodic structure.

12. (Amended) A light emitting device as claimed in claim 1, wherein the corrugated surface has a three-dimensional periodic structure.

13. (Amended) A light emitting device as claimed in claim 1, wherein the corrugated surface has the structure of a chirping grating.

14. (Amended) A light emitting device as claimed in claim 1, wherein the layer of light emitting material has a plurality of regions each of which has a corrugated surface with a respectively different pitch.

REMARKS

Claims 1-20 are pending. By this Preliminary Amendment, claims 3-14 are amended to eliminate multiple dependencies. The attached Appendix includes marked-up copies of each claim (37 C.F.R. 1.121(c)(ii)).

Respectfully submitted,

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Date: April 12, 2001

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APPENDIX

Changes to Claims:

The following is a marked up version of the amended claims:

3. (Amended) A light emitting device as claimed in claim 1 ~~or claim 2~~, wherein the substrate has a corrugated surface.

4. (Amended) A light emitting device as claimed in claim 1 ~~or claim 2~~, wherein a conductive polymer layer is formed over the transparent electrode, the conductive polymer layer having a corrugated surface opposite to a surface facing the transparent electrode, and the light emitting material being in contact with said corrugated surface of the conductive polymer layer.

5. (Amended) A light emitting device as claimed in ~~any preceding~~ claim 1, wherein the light emitting material has an absorption coefficient of less than 1000 cm^{-1}.

6. (Amended) A light emitting device as claimed in ~~any preceding~~ claim 1, wherein the light emitting material comprised a conjugated ploymer.

7. (Amended) A light emitting device as claimed in any of claims 1 ~~to 5~~, wherein the light emitting material comprises a polyflourine derivative.

8. (Amended) A light emitting device as claimed in ~~any preceding~~ claim 1, wherein the corrugated surface has a pitch Λ according to the equation: -

$$\Lambda = v\lambda_0/n\sin\theta_m$$

in which angle θ_m is the angle of reflection from the upper and lower surfaces of the layer of light emitting material of light propagating in a waveguide mode m in the light emitting material, λ_0 is the output wavelength, and n and v are integers.

9. (Amended) A light emitting device as claimed in ~~any preceding~~ claim 1 , wherein the pitch of the corrugated surface is in the range 300 to 450nm.

10. (Amended) A light emitting device as claimed in ~~any preceding~~ claim 1, wherein the corrugated surface has a one-dimensional periodic structure.

11. (Amended) A light emitting device as claimed in ~~any of~~ claim 1 ~~to 9~~, wherein the corrugated surface has a two-dimensional periodic structure.

12. (Amended) A light emitting device as claimed in ~~any of~~ claim 1 ~~to 9~~, wherein the corrugated surface has a three-dimensional periodic structure.

13. (Amended) A light emitting device as claimed in ~~any of~~ claim 1 ~~to 9~~, wherein the corrugated surface has the structure of a chirping grating.

14. (Amended) A light emitting device as claimed in ~~any preceding~~ claim 1, wherein the layer of light emitting material has a plurality of regions each of which has a corrugated surface with a respectively different pitch.